

1. A three-piece golf ball comprising:

a core comprising a center and a thread windings layer, wherein said center has a weight of about between 17 grams to 19 grams, and wherein said thread windings layer has an unstressed thread dimension of about 0.020 inches to 0.028 inches by 1/16 of an inch, and has a Swartz modulus between 160 to 240 p.s.i.;

a cover having a Shore D hardness in the range of about 46 Shore D to about 54 Shore D; and

an outer surface divided into a plurality of polygonal configurations, which include pentagons, squares and triangles; and

a plurality of dimples arranged on the outer surface, with a first pattern of dimples associated with each triangle, a second pattern of dimples associated with each pentagon, and a third pattern of dimples associated with each square.

2. The ball of claim 1 wherein the center has a diameter in the range of about 1.00 inches to about 1.25 inches.

3. The ball of claim 2 wherein the threads in said thread windings layer are wound at a tension in the range of about 700 grams tension to about 950 grams.

4. The ball of claim 3 wherein the threads in said thread windings layer are wound in an open great circle pattern.
5. The ball of claim 4 wherein the thread windings layer has a thickness of about 0.20 inches to 0.26 inches.
6. The ball of claim 5 wherein the cover has a thickness of about 0.065 inches to 0.015 inches.
7. The golf ball of claim 6 wherein said outer surface is divided into a polyhedron defined as a rhombicosadodecahedron.
8. The golf ball of claim 7 wherein said dimples are single radius in cross section.
9. The golf ball of claim 8 wherein the total number of dimples is at least 402.
10. The golf ball of claim 9 wherein said dimples have a range of depth from about 0.0082 inches to 0.0074 inches.
11. The golf ball of claim 10 wherein the ball has a compression in the range of about 70 PGA to about 100 PGA.

12. The golf ball of claim 6 further comprising fifteen parting lines along great circle paths for further dividing said outer surface, said parting lines combining to essentially divide each pentagon into ten smaller triangles of equal size, each triangle into six triangles of equal size and each square into four smaller squares of equal size to obtain an outer surface consisting of smaller triangles and squares.

13. The golf ball of claim 1 further comprising a first set of dimples, with each dimple in the first set having a first size; a second set of dimples, with each dimple in the second set having a second size; and a third set of dimples, with each dimple in the third set having a third size, wherein the plurality of dimples are selected from the first set of dimples, the second set of dimples, and the third set of dimples.

14. The golf ball of claim 13 wherein said first set of dimples has a diameter in the range of about 0.154 inches to about 0.158 inches.

15. The golf ball of claim 14 wherein said second set of dimples has a diameter in the range of about 0.142 inches to about 0.147 inches.

16. The golf ball of claim 15 wherein said third set of dimples has a diameter in the range of about 0.140 inches to about 0.144 inches.

17. The golf ball of claim 16 wherein said first set of dimples has a radius of about 0.3843 inches.

18. The golf ball of claim 17 wherein said second set of dimples has a radius of about 0.3325 inches.

19. The golf ball of claim 18 wherein said third set of dimples has a radius of about 0.3191 inches.

20. The golf ball of claim 1 further comprising:

two poles,

an uninterrupted equatorial great circle path defining a mold parting line symmetrically positioned with respect to said two poles on said outer surface; and

a pair of first polygonal configurations each being located on opposite sides of said outer surface to include one of said two poles symmetrically arranged within its boundaries.

21. The golf of claim 1, with said cover further comprising:

(a) a polyurethane prepolymer comprising:

- (1) a diisocyanate; and,
- (2) a polyol; and,
- (b) a curing agent comprising:
 - (1) a slow-reacting diamine; and,
 - (2) a fast-reacting diamine.

22. The golf ball of claim 21 wherein the diisocyanate is selected from the group consisting of toluene diisocyanate, 4,4'-diphenylmethane diisocyanate, Isophorone diisocyanate and any mixtures thereof.

23. The ball of claim 22 wherein the polyol is an ether glycol.

24. The ball of claim 22 wherein the polyol is polytetramethylene glycol.

25. The golf ball of claim 22 wherein the curing agent comprises a slow-reacting diamine with diethyl-2,4-toluenediamine.

26. The golf ball of claim 22 wherein the curing agent comprises dimethylthio-2,4-toluenediamine and a fast-reacting diamine.

27. The golf ball of claim 21 wherein the curing agent comprises a blend of dimethylthio-2,4-toluenediamine and diethyl-2,4-toluenediamine.

28. The golf ball of claim 1 wherein the thread windings layer is made from polyisoprene rubber and or natural rubber.

29. A thread-wound golf ball comprising:

a liquid-filled spherical rubber center;

a thread windings layer surrounding the rubber center;

a polyurethane cover having an outer surface and an inner surface, said inner surface in contact with and penetrating the thread windings layer and enclosing the thread windings layer therewith; which golf ball has a compression in the range of about 70 PGA to about 100 PGA; and

wherein the center has a weight of from 17 grams to 19 grams, and a diameter in the range of about 1.00 inches to about 1.25 inches; and wherein the thread windings layer has threads wound in an open great circle pattern to a thickness of between 0.20 and 0.26 inches, a thread tension from about 700 grams to 950 grams, an unstressed thread dimension of about $1/16^{\text{th}}$ of an inch width by about 0.020 inches to 0.028 inches height, and a Swartz modulus between 160 p.s.i. and 240 p.s.i.; and

wherein the cover has a thickness of about 0.065 inches to 0.015 inches and a Shore D hardness in the range of about 46 Shore D to about 54 Shore D.

30. In a golf ball of the type having a liquid-filled rubber center, the improvement which comprises a thread windings layer having threads wound in an open great circle pattern surrounding the rubber center;

a polyurethane cover having an outer surface and an inner surface which penetrates and encloses the thread windings layer therewith;

said golf ball having a ball compression in the range of about 70 PGA to about 100 PGA.

31. In a golf ball according to claim 30, the improvement further comprising the thread windings layer having a thickness of between 0.20 to 0.26 inches, a thread tension from about 700 grams to 950 grams, an unstressed thread dimension of about $1/16^{\text{th}}$ of an inch width by about 0.020 inches to 0.028 inches height, and a Swartz modulus between 160 p.s.i. and 240 p.s.i.; and

the cover having a thickness of about 0.065 inches to 0.015 inches and a Shore D hardness in the range of about 46 Shore D

to about 54 Shore D.

32. A method of preparing a golf ball comprising:

- a) providing a liquid-filled rubber center;
- b) freezing the rubber center;
- c) wrapping the frozen rubber center with thread windings in an open great circle pattern with a thread tension from about 700 grams to 950 grams, to a thread winding thickness of between 0.20 inches and 0.26 inches, wherein the thread windings have an unstressed thread dimension of about $1/16^{\text{th}}$ of an inch width by about 0.020 inches to 0.028 inches height, a Swartz modulus between 160 to 240 p.s.i.;
- d) providing a polymer mixture;
- e) pouring the polymer mixture into a first mold half and allowing the mixture to reach a semi-gelled state;
- f) pouring the polymer mixture into a second mold half and allowing the mixture to reach a semi-gelled state;
- g) lowering the rubber center with thread windings into the semi-gelled polymer mixture in the first mold half such that the rubber center with thread windings is suspended in the semi-gelled polymer mixture;
- h) allowing the semi-gelled polymer mixture to penetrate the thread windings;
- i) inverting the first mold half and mating it to the second mold half;

j) heating the mated first and second mold halves containing the polymer mixture and the rubber center with thread windings;

k) cooling the mated first and second mold halves containing the polymer mixture and the rubber center with thread windings; and

l) removing the molded golf ball from the first and second mold halves and allowing the golf ball to cure.